

EXECUTIVE SUMMARY

This report provides a summary of the work activities and conclusions related to the US 31 Hamilton County Major Investment Study. The focus of the study is on that segment of the US 31 corridor between Interstate 465 on the south and 196th Street on the north, a segment of about 11 miles. Subjects covered include...

- An analysis of existing and year 2020 forecasted traffic conditions in the US 31 corridor as well as the projected demographic and employment growth underlying the future travel conditions;
- A detailed analysis of alternative "build" and non-build" actions that might be taken to ameliorate forecasted traffic congestion in the corridor, and;
- A description of the recommended alternative and a proposed phasing program for its construction.

TRAFFIC CONDITIONS

At least five out of the 23 intersections along the US 31 corridor are currently operating at level of service (LOS) "E" or "F". At the present time, about 10% of the mileage operates at LOS "E" and 36% at "F". Population in Hamilton County is expected to grow at least 58% in the three decades between 1990 and 2020. The number of households will grow approximately 88% and employment will increase 132%. Existing growth makes Hamilton County not only the fastest-growing county in the State, but in the entire midwestern part of the country. This explosive growth translates into serious problems in the future. Vehicle-miles of travel are expected to grow 118% between 1993 and 2020. Due to increasing congestion, this growth in vehicular travel suggests a 319% growth in vehicle-hours of travel. Average daily traffic on US 31 can be expected to grow 40% to 100% depending on the location and the level of service will deteriorate to "F" throughout the entire length of the corridor.

ALTERNATIVE ANALYSIS

A total of seven alternatives that would be either partially or completely on new alignments were evaluated. In addition to these, two alternative were considered that would upgrade the existing facility to urban freeway standards. "Upgrade 1" focused exclusively on the existing highway. "Upgrade 2" was the same as Upgrade 1 with the addition of new travel lanes on SR 431. Finally, a combination of transportation system management (TSM) improvements and upgrading was evaluated. The "TSM/Upgrade" focused on upgrading US 31 from near 136th Street north and widening existing parallel facilities from 136th Street south.

Computer modeling of all the alternatives was undertaken. Completely new alignments were tested with a 6-land cross section. The upgrade alternatives were tested with 8 lanes between 103rd and 161st Street and 6 lanes north of 161st Street. Urban single-point interchanges were used as the predominant type of interchange configuration at all access points along US31.

Benefit-cost analysis, various system performance measures, and human/environmental considerations were used in evaluation the alternatives. *All of the benefit-cost and system performance measures point to upgrading US 31 to a freeway.* Moreover, Upgrade 2 provides significant net benefits beyond Upgrade 1. By the Year 2020, Upgrade 2 would eliminate about 1,250 accidents per year and would deliver over \$429 million in time saving benefits. Depending on the final design at the southern end of the corridor, the freeway upgrade would reduce the number of capacity-deficient intersections along US31 to 2 or less.

A determined effort to listen to the concerned public was made throughout the course of the study. This was accomplished through several public information meetings, presentations before various agency boards, and a formal survey of business managers and employees located along the corridor. The open nature of the study generated over 200 pieces of correspondence, virtually all of which expressed the hope that INDOT would solve the problem *on the existing alignment.*

The primary purpose of the survey was to assess the viability of transit and "travel demand management" (TDM) strategies within the corridor. Modes of public transit did not find wide acceptance among the respondents. However, two TDM strategies did garner significant support from both management and

employees. These are telecommuting and flexible work hours. A recommendation of this study is that the State considers pursuing policies that would encourage greater private sector implementation of telecommuting and flex time wherever appropriate.

An environmental overview of the alternatives was conducted as a part of this study and has been compiled as a separate volume. The overview did not greatly favor one alternative over another. On the basis of published data and inter-agency coordination, no environmental constraints were identified that would preempt the construction of any of the alternatives, provided ordinary mitigation measures associated with a project of this size were undertaken.

Recommended Improvement & Phasing Plan

The conclusion of the alternatives analysis was that US31 should be upgraded to urban freeway standards from 103rd Street North to 196th Street. Optionally, the project could be extended farther south to include a freeway-to-freeway interchange between US31 and Interstate 465. It was, also, concluded that SR 431 should be improved at least to the extent of adding an additional travel lane in each direction.

The conceptual design of the highway suggested some modifications to the existing laneage. Specifically, it is recommended that the highway be constructed with 8 travel lanes beginning at 103rd Street (4 in each direction) and continuing north up to the northbound 146th Street interchange. For a short distance between exit and entrance ramps, the facility would narrow to 6 lanes (3 in each direction). Passing under 146th Street just north of the merge/diverge point with SR431, the highway would widen out to either 11 or 12 lanes (including 1 or 2 entrance/exit lanes depending on the exact interchange option that is chosen). Continuing north, at 151st Street the highway would narrow down to 10 lanes (5 in each direction). The fifth north- and southbound lanes would be dropped at the 161st Street interchange as they become off-and on-ramps at 161st Street. Accordingly, at 161st Street the highway would be back down to the 8-lane cross section typical of the segment between 103rd and 146th streets. Continuing north, the highway would narrow to 6 travel lanes (3 in each direction) at the off- and on-ramps to SR 32. Between SR 32 and the project's northern terminus at 196th Street, this 6-lane section would be used.

The construction program divides the corridor improvement into 8 parts. It is recommended that construction begin with the segment between 136th and 161st streets. Construction would then systematically move south in stages without any leapfrogging down to 116th Street. Concentrating early efforts between 116th and 161st streets make sense from the standpoint that these are the fastest growing segments of the corridor. After completion of the 116th Street area, the decision as to whether or not to build the freeway-to-freeway interchange could be made on the basis of available funding and competing needs. Delaying construction on this southern segment is also justified in that the area south of 106th Street already has more capacity than segments farther north. It also mitigates the chances that further improvements to this section would ever need to be ripped out and reconstructed with more capacity. The final two phases would then move to the north end of the corridor where traffic volumes are comparatively low and anticipated growth is farthest in the future.

Inflation estimates are based on an assumed inflation rate of 3% with construction on the first phase beginning around 2001. Given these assumptions, the 1996 price tag of \$383 million cost for all of the corridor improvements would inflate to about \$475 million assuming the freeway-to-freeway interchange is *not* built. If it is built, the \$483 million cost would escalate to approximately \$616 million.

More detailed information on the individual construction segments can be found in the project engineering reports associated with this study and published in separate volumes.